Implementing Chatbots in the Customer Service Process to Reduce Workload

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Laurea University of Applied Sciences **Abstract**
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The purpose of this project was to offer Leadoo MT insight on how chatbots can be used as a tool in customer service. The objective of the thesis is to find out whether chatbots can be used efficiently in customer service to reduce the workload of the staff and ultimately lower costs.

Leadoo MT is a marketing technology company, that offers its customers conversational chatbots that are implemented into the clients' websites. In addition to the bot building, Leadoo MT also plans the bots ann provides a data platform for their customers. Leadoo MT benefits from this thesis by receiving evidence that chatbots can be an efficient tool in customer service.

The empirical research of this project was conducted as action research together with the client company. To guide the action research, the Information Technology Infrastructure Library (ITIL) framework was used in order to replace the customer service team with the chatbot as the first line of support. The problem Leadoo MT had was that it was only expected that chatbots could be used efficiently in customer service, but no research had been conducted by them to be used as a reference.

The results of the action research were positive, with the customer stating that the requests received by the customer service team were reduced by 60% after the bot was implemented. In addition, as an added benefit for the website visitors, the requests that were answered by the new bot were instantly taken care of.

Keywords: Chatbots, Customer Service, User experience

Glossary of terms and abbreviations used

ITIL = Information Technology Infrastructure Library

NLP = Natural Language Processing

KPI = Key Performance Indicator

CMS = Content Management System

AI = Artifical Intelligence

UX = User Experience

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1 Introduction

Customer experience is becoming more and more important than ever, hence being able to offer service around the clock is needed to keep the potential customers interested in the product or service offered. Companies are now looking for solutions to overcome the slack in their service, and one potential solution is the use of chatbots - an around-the-clock servant to help website visitors to find the information they are looking for, and eventually, convert them into customers.

In Taulli's (2019) article for Forbes, he stated that up to 80% of companies will use some sort of chatbot by the year 2020. Taulli also said that these will save the companies around $8 billion by the year 2022.

While chatbots should never replace the human interaction of customer service, they can help to reduce the workload drastically. In Reddy's (2017) article for IBM, he stated that chatbots are able to decrease the number of customer service calls by up to 30%. Not only can bots help the website visitors find what they're looking for just like human customer service, they never get tired or take a vacation.

Charlton (2013) wrote that up to 83% of online customers wish for some sort of assistance on their purchase journey. Depending on how many visitors the website gets, the number of potential customers requiring help can be extremely high. According to Charlton, the most popular questions are about the delivery costs or information about the product/service. These simple questions can be easily answered with the use of bots. IBM's Reddy (2017) backs this, stating that up to 80% of these typical questions may be answered by the bot. Bots also answer the visitor immediately, with no need to wait for a person to get back to them.

Chatbots are by no means a new technology, with MIT's ELIZA was created back in 1966 by Joseph Weizenbaum, he described (1966) ELIZA as a computer program that has the possibility to carry out simple discussions with a human. The replies of ELIZA were created to seem very much like those of a psychotherapist.

1.1 Objectives

This paper is done for Leadoo Marketing Technologies to offer them an understanding on how chatbots be used to lower the workload of customer service team and through that, lower costs.

The objective of this thesis is to receive a better understanding of the benefits chatbots offer in the customer service process for a company. The main objective is to find out whether a chatbot can reduce the workload of a customer service team to hence allow companies to reduce the workforce required. The thesis will discuss the benefits of the decreased costs through around-the-clock service, and instantaneous reply times. The technical side of chatbots will not be covered in detail

2 Customer Service

Customer experience is rising to be one of the most important ways to stand out from the crowd, with companies having realized that besides the quality of a product or service offered, offering a high quality customer service helps to generate more sales. This chapter will discuss the importance of customer service to a business and the Key performance indicators (KPI's) of measuring the level of customer service.

McQuerry (2019) claims that one of the biggest benefits of high standard customer service is its ability of retaining customers once they're first converted into customers. In Amerasan's (2019) article for BlogSpot, she backs this statement, writing that it is more cost-efficient to keep existing clients than to acquire new customers. Mort (2019) suggests that customers who feel like they're being acknowledged and appreciated are much more likely to return as customers in the future. Companies are investing more money than ever to find out which parts of their processes cause the consumer to have negative feelings towards them and through that, creating more long-term customer relationships.

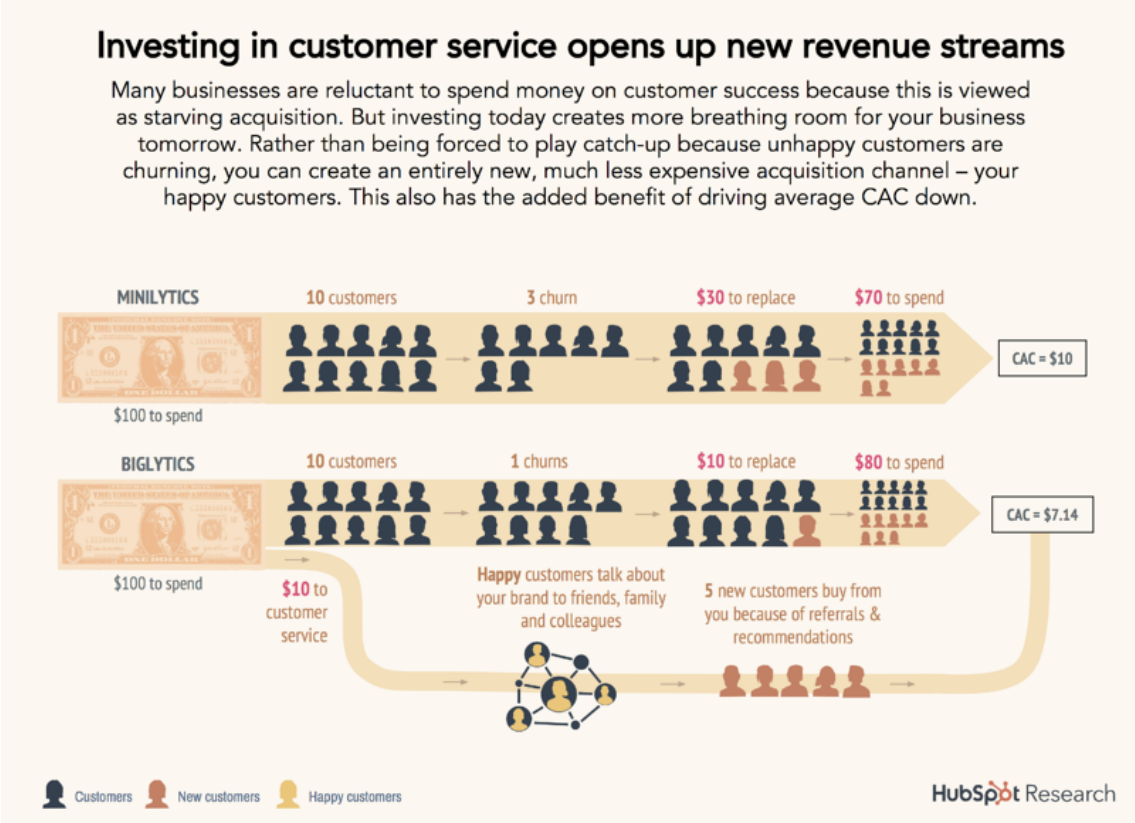

Figure 1: Investing in customer retaining for profit (Redbord, 2018)

Amerasan (2019) also wrote that customer service efficiently tells the consumer a lot about company values. This is due to the fact that the customer service team is often the first point of contact when a consumer runs into a problem. Planning the customer service process to showcase the company brand can be an extremely efficient way to influence how the consumer views a company.

To reach the objectives of this thesis, the Information Technology Infrastructure Library (ITIL) framework needs to be explained. ITIL is mostly used in information technology and its service management processes. The framework however can be utilized to reach the objectives of this thesis.

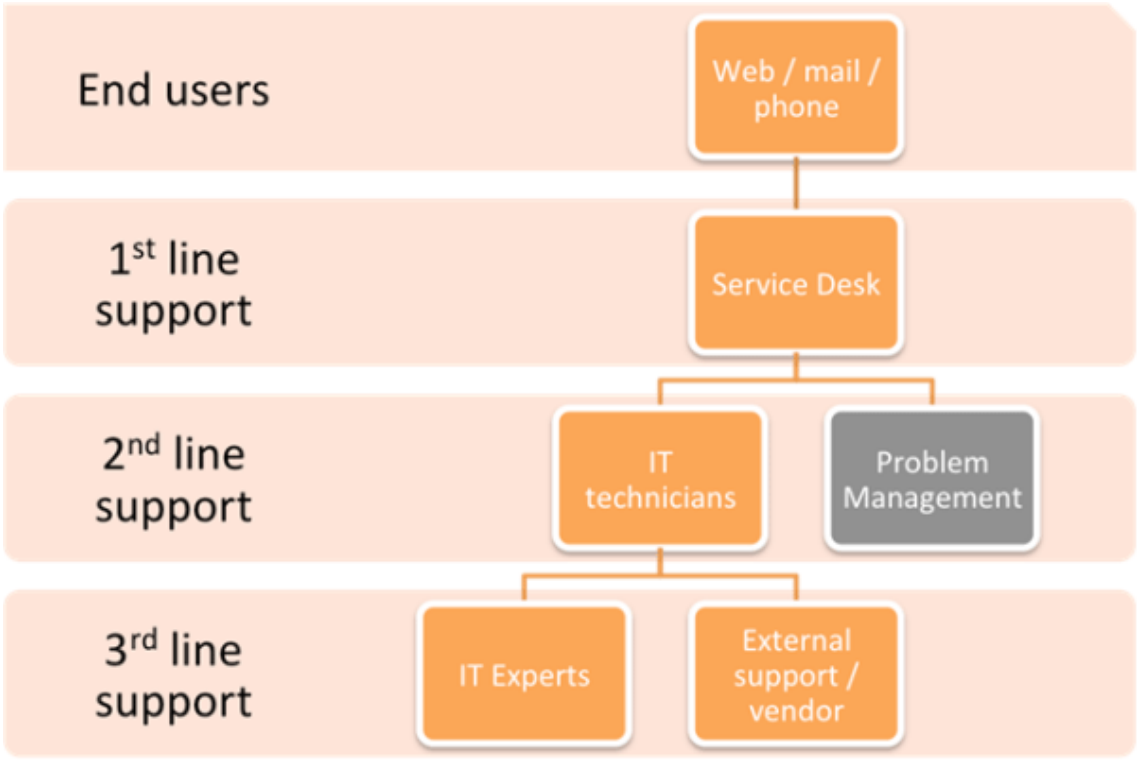

Figure 2: ITIL tier framework (Zitek n.d.)

In the ITIL tier framework, the customer service process is looked at as different levels. Typically, the first line of support that the end-users will face is the service desk. The service desk will aim to answer the questions or find a solution to the problem that the end-user is having. However, if the first line support is unable to solve the problem, it will be moved to the second line support and so on. The second line support includes personnel that are more skilled or have more knowledge about the topic. In the third line support, the company can have even more technically skilled staff members. In the third line support, the request can also be forwarded to an external support or vendor.

To reach the objective of this thesis, action research was conducted to move the customer service (service desk) to become the new second line support, while implementing a chatbot, making it the first line of support.

From a service management perspective, it is to be noted that for a company to keep thriving, it must be able to improve its processes, for example, systems, infrastructure, or tools. This ensures that the company is prepared for new circumstances, events, or business requirements that affect consumer expectations. (Addy 2007, 46)

2.1 Customer service metrics

As the importance of customer service for customer relationships is undeniable, being able to efficiently collect and track the data of where the customer service currently lies is a key

process to be able to understand when and what should be improved to reach the best possible level of customer service for the consumer. There are numerous ways of measuring the level of customer service, and this sub-chapter will discuss the ones that are most important to the objectives of this paper.

Rosen (no date) for GrooveHq stated the first way of measuring the state of customer service is the number of requests received by the customer service team. Understanding how many consumers are having issues or questions about the company product, service, or website can give valuable information on what can be improved. Rosen (no date) offers self-service as an answer to reduce the number of requests received.

As a follow-up to the number of requests received, Rosen (no date) stated that the unresolved requests should be tracked as well. While being able to offer a fast reply to a request, the issue of the consumer must be solved for them to feel like they've received the best service.

Rosen (no date) suggests two other metrics that are important for the objectives of this thesis: the average response time and the average first response time of the customer service. The average response time is the amount of time it takes for a customer service person to reply to any message of the visitor. The first response time is the average amount of time required for the visitor to get the first response by the company.

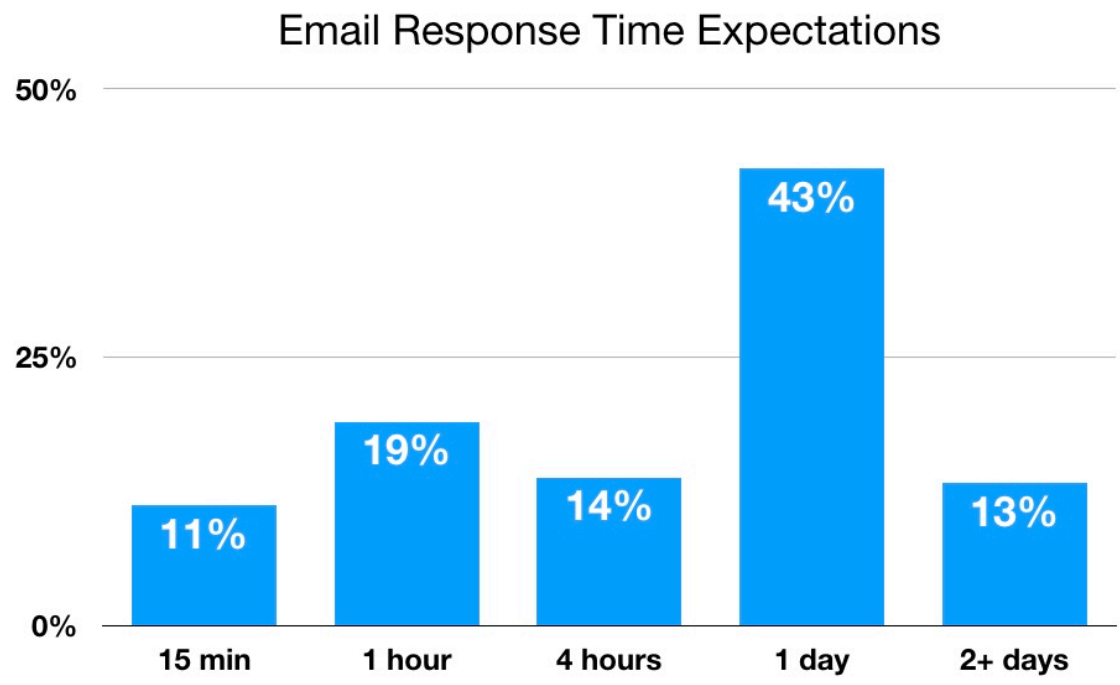

Figure 3: Email response expectations (Toister 2018)

In Figure 3 above are the consumer expectations of when an email should be answered by the company contacted. While the most popular expectation of a reply is within 24 hours, 44% of the consumers expect to get a reply within 4 hours.

In addition to these, Dhangal (2016) brought up the increased conversion rate with improved customer service. Dhangal (2016) also states that being able to understand the customers, it is possible to further optimize the customer journey.

To reach the objectives of this thesis, the following metrics are to be measured and improved:

- Number of requests
- Number of unresolved requests
- Average response time
- Average first response time

2.2 Use of Chatbots in Customer Service

Chatbots have the ability to create multiple different benefits in the customer service sector for both the company that decides to include it in their selection of customer service tools, as well as the consumer.

This sub-chapter will review the use of chatbots in customer service by discussing chatbots in general, their benefits for both consumers and businesses, and their possible limitations. In addition, in this section, the importance of user experience will be reviewed. This chapter will offer crucial information in order to answer the research questions provided earlier.

Chatbots in customer service is growing fast, in Shukairy's (no date) article for Invespcro, she states that up to 85% of customer interactions will be done without a human counterpart. She also states that for 40% of customers, it doesn't matter if the assistance comes from a bot or an actual person.

Cancel & Gerhardt (2018, 39) suggest that while chatbots have the ability to take care of multiple different tasks without the need of a human, they should not be aimed to replace human interaction completely. A company should think of chatbots as a tool to improve their existing customer service process, by reducing the workload of service personnel.

2.2.1 Chatbots Explained

Pietruzewska (2020) describes chatbots as computer programs designed to mimic human conversation through button options or written and spoken language. Some more advanced

chatbots may include Natural Language Processing (NLP), which allows them to understand what is written or spoken to them.

The following figure will have an example of what a chatbot offered by Leadoo MT looks like. The bot is hidden in the bottom right side corner until the website visitor decides that they want to have a discussion with the bot. Once the visitor opens the chat window, it will look like in the picture below:

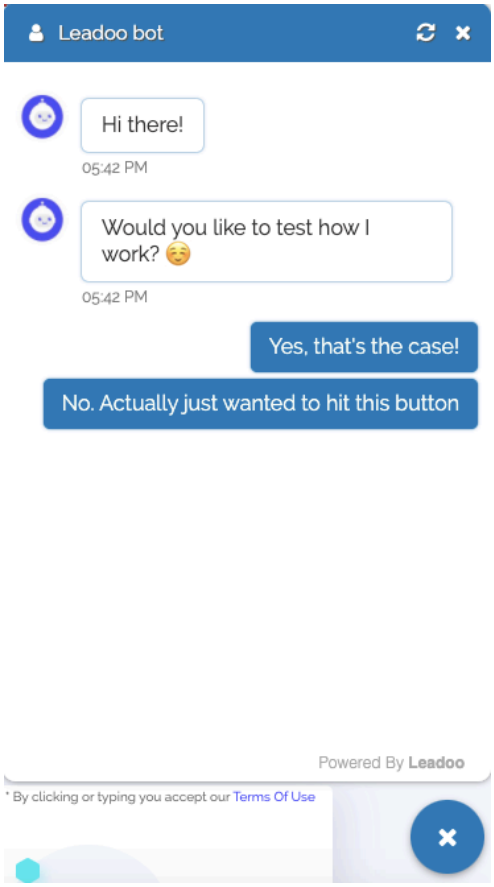

Figure 4: Leadoo chatbot opened

Once the chatbot is opened, it has a set amount of options to choose from, in this simple example two (see Figure 4). Savina (2019) would describe this as a button-based bot, which offers different options for the user to choose from, these options may take the user through different conversation paths depending on how they were built. Savina (2019) also names four different chatbot types: Hybrid, which uses the same button-driven conversation as the button-based bot while also allowing the user to type in questions using the NLP. AI, a bot that uses artificial intelligence (AI) to handle the conversation. Omni-channel AI bot, which means an AI-driven bot used in multiple different channels, from company website to social media to email. The last bot named is voice recognition bot, which Savina (2019) describes as the bot type of the future. A voice-driven bot is created to listen to human dialogue in order to

handle the conversation. An example of a voice-driven chat-bot would be the Amazon's Alexa, a speaker which also includes speech recognition.

The chatbot showcased in the picture above is the most technologically simple option (button-based bot). Despite the simplicity, the button-based bot model can provide as good service to its clients as the more technologically advanced ones. In order to do that, the bot needs to be built carefully and the customer's possible conflict points must be well known. Boutin (2017) wrote for Chatbots Magazine that while NLP is an efficient tool to use in a chatbot, using it to answer simple questions is unnecessary as the answer may simply be behind a few clicks on a visitor's mouse.

Hall, Venigalla & Janarthanam (2017, 13) state that chatbots may be divided into two categories, enterprise assistants and personal assistants. Bots in the enterprise assistant category are considered to be very similar to customer service personnel, they help the users with questions and issues they might have. Personal assistant chatbots are those aimed to be used by private persons. Above mentioned Amazon Alexa is a great example of a Personal assistant chatbot. In this paper, the main focus will be on the enterprise assistants and their benefits to a company.

Hall & co (2017, 14) also say that chatbots have been used around a number of different situations and sectors. These sectors include retail, banking and health care to name a few, among many others.

2.2.2 Benefits of Chatbots

There are a number of benefits of using chatbots in customer service compared to traditional options. Being able to offer service to all customers around the clock is one of the biggest benefits chatbots offer, while also giving the answers immediately. Cancel & Gerhardt (2019) agree with this, stating that when asked from consumers, these both were the benefits that were mentioned the most when asked how can chatbots improve the experience of website visitors. Cancel & Gerhardt (2018) were also surprised about the fact that not only millennials understand the benefits of chatbots, But they also provide benefits for the aging population.

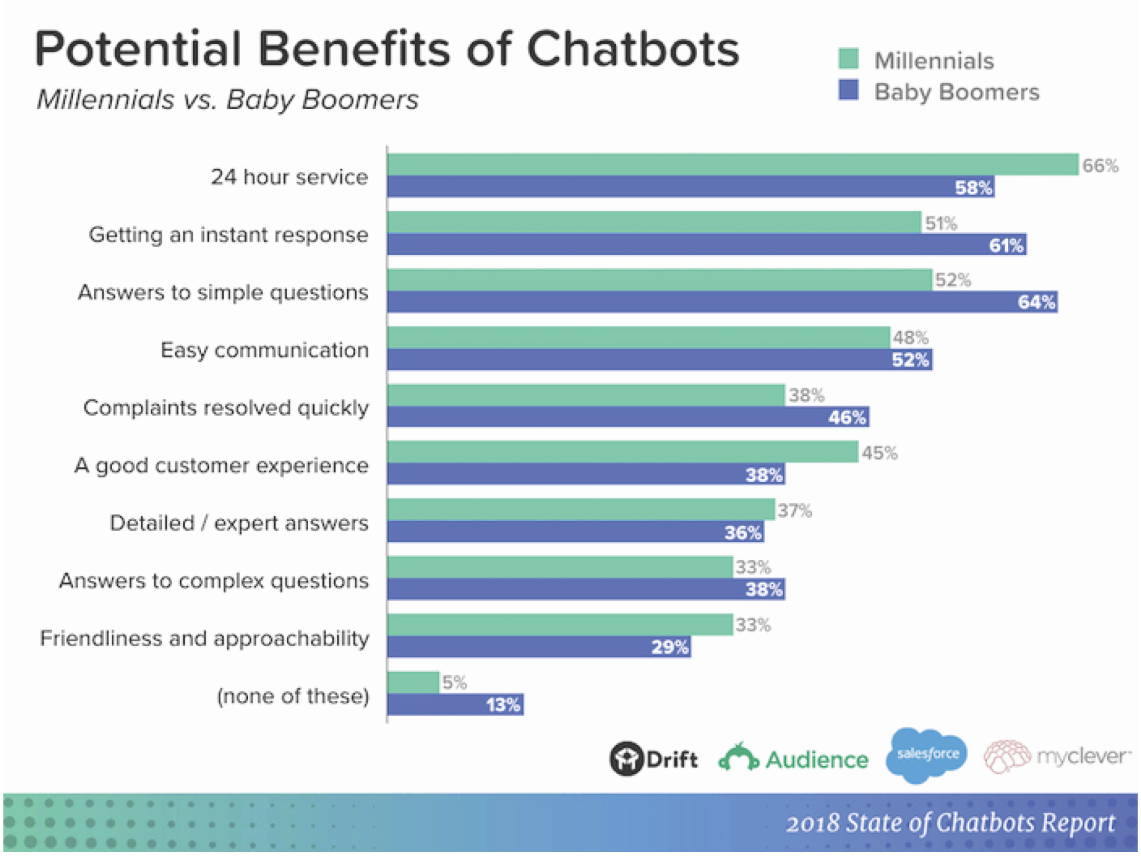

Figure 5: Millennials and baby boomers both understand the benefits provided by chatbots (Cancel 2019)

The other drastic benefit is the reduction of cost in a result of the lowered need for customer service personnel. Gupta (2019) states that using chatbots further optimizes the costs by increasing the overall customer experience, allowing a higher conversion rate since bots have the ability to answer all of the questions instantly. Business Insider (2017) presents this figure that shows the possible savings offered by the use of chatbots:

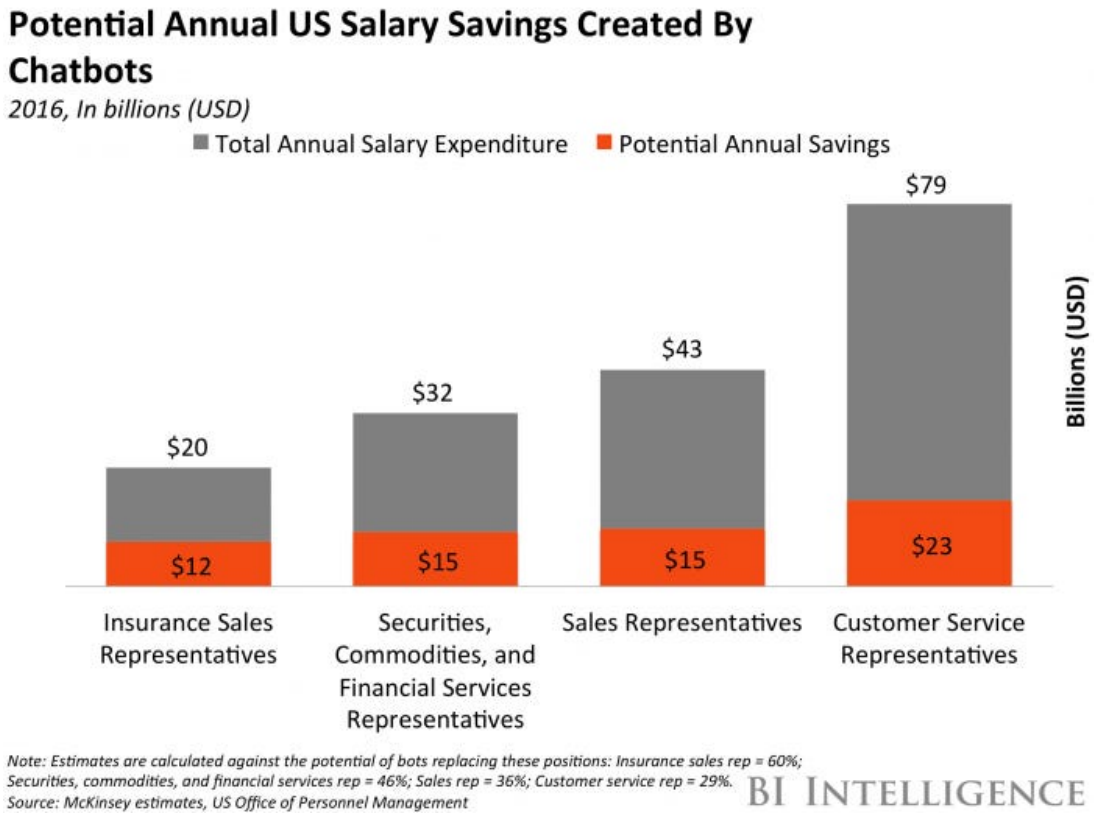

Figure 6: Potential salary savings with the use of chatbots (Business Insider 2017)

Among wait time and cost-reducing, Oppenheimer (2019) also listed the following benefits a company gets should they integrate chatbots to their customer service process:

- Forwarding of messages or tickets goes right instantly
- Getting an answer instantly
- Enhanced self-service.

The use of chatbots allows companies to understand their website visitors even better through data collection. Being able to track how the visitors interact with the bot to know the most popular questions the visitors have. Saunders (2017) says that when a company has a higher insight of it's visitors, it possible to change the website to offer the information at an earlier stage.

In a Helpshift's (2017) study, it was discovered that while consumers did not completely enjoy speaking with chatbots, they would prefer it over waiting for a human customer service agent.

2.2.3 Limitations of Chatbots

While chatbots have great benefits to companies that decide to use them, there are some un-deniable limitations that should not be overlooked. Lauer (no date) wrote for iAdvize that the

first downside to the use of chatbots is that they're not real persons, and therefore can't have real emotions.

In a blog post for Due, Sloan (2018) stated that chatbots are not able to answer all of the possible questions a visitor may have. This can also result in frustration in the consumer. Since the bots are not able to hold in as much information, they're unable to answer the more specific questions the visitor may have. Sebastian (2018) stated in a research made for GoodFirms, that the most popular user-related disadvantages of chatbots are in the following figure:

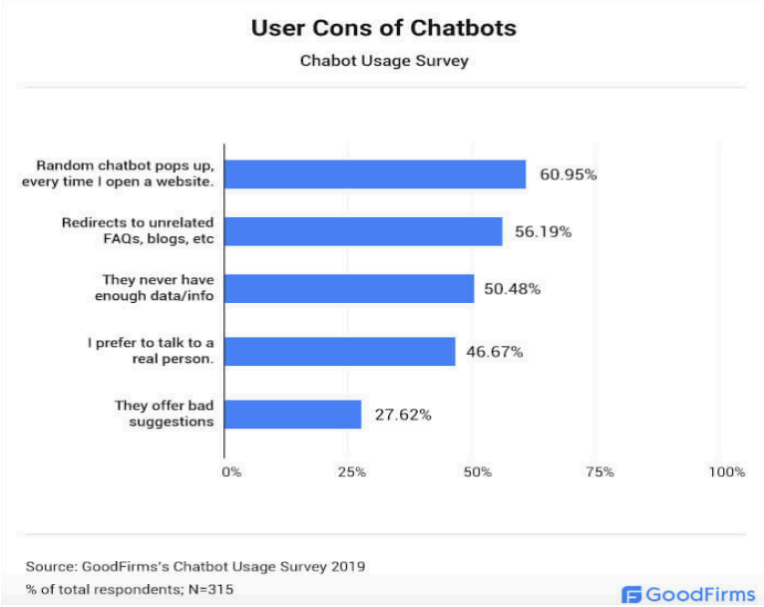

Figure 7: GoodFirms cons of chatbots by users (Sebastian, no date)

It is shown in the Figure 7 that the most popular downside of the chatbots is the fact that they often pop up on the visitor's screen with no warning, resulting in the visitor having to interrupt what they're currently doing to close the chat. This can cause annoyance towards the website visited or even the company behind the website.

Sebastian (2018) also noted that while the visitors may already be having a conversation with a bot, the majority (73.33%) would rather be forwarded to speak with a human agent rather than continuing the discussion with the bot.

In an article written for eCommerce Nation, Gómez (2018) wrote that one of the biggest downsides of chatbots for a company is the time they consume. Though a simple chatbot may be created in quite a short time, being able to tackle the other limitations mentioned earlier requires a lot of work.

2.3 User Experience

Parrotte (2017) describes user experience to be about understanding the consumers and their expectations and helping them achieve what they're doing. Parrotte (2017) stated that it isn't sufficient to compete solely around the price and performance of the product of service.

Being able to offer the best possible service, User Experience (UX) is becoming more important than ever. Morgan (2018) claims that up to 81% of UX chiefs feel that they will mostly compete with experience in the near future. Gube (2010) wrote that even though websites are getting increasingly more complex, they should still be built with usability in mind. Visitors tend to make decisions rather they want to become customers based on the experience they have using the website.

Budiu (2018) wrote that the use of customer service chatbots to improve website UX is clearly beneficial if the bot is created with the knowledge to understand what questions need to be answered. If the bot is built poorly, it may only cause negative in the users. Budiu (2018) also suggests that when designing chatbots, the UX of them should be kept in mind. Being honest about the fact that the visitor is speaking to a computer and not an actual person may reduce frustration with the bot as it can be expected by the user that it may not be able to answer more specific questions.

Using the Hierarchy of user experience framework (see figure below) allows the company to build their website to have the highest user experience.

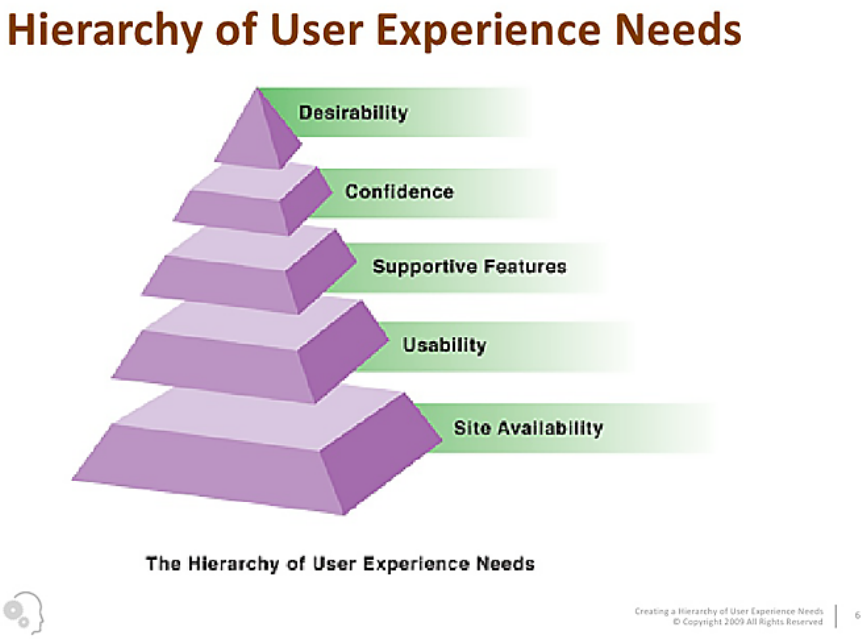

Figure 8: Hierarchy of user experience framework (Parrotte 2018)

The Hierarchy of user experience framework has five layers, with each of the layers having to be accomplished before concentrating on the next. The foundation of the framework, site availability, means that the website needs to be available for the visitors for there to be any sort of experience to be had. In the usability layer, the overall usability is covered, for an example, how easy is it to navigate the page and use it. The Supportive features layer makes sure that the visitor can obtain support should the run into any problems using the website. A supportive feature may be a set of instructions to use the website, a live chat, FAQ section, or a chatbot.

The confidence layer is about providing the visitor a sense of trust. The visitor may feel unsecure about providing their billing details or even email if they don't feel that they can trust the company behind the website. The final layer, desirability layer, should only be planned once all of the previously mentioned layers have been taken into account. In this layer, the main goal is to offer the visitor something that positively surprises them, exceeding the expectations.

3 Research Methodology

To reach the objective of this thesis, action research was conducted to give a broad understanding of how the use of chatbots changes, and potentially improves the customer service

process. The empiric research made in this paper will compare the state of a Leadoo MT's client company's customer service before and after the implementation of a chatbot.

Baskerville (1999, 2) describes action research to be an efficient research method creating applicable results. This is due to the methodology being tied to practical action to solve a problem. In the following figure is shown the action research methodology to reach the objectives of this thesis:

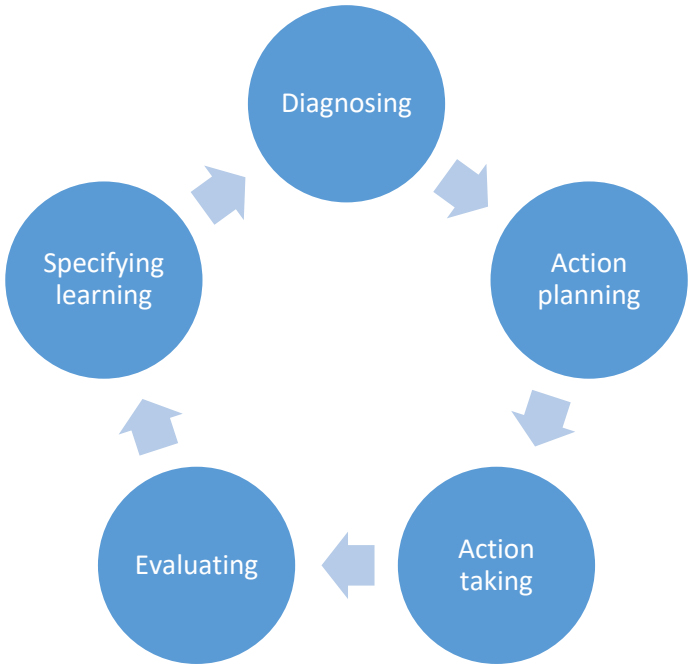

Figure 9: Action research methodology (Baskerville 1999, 14)

In the diagnosing phase, the problem that the company wished to change is diagnosed and understood. The diagnosing of the problem requires a deep understanding of the issue through a hypothesis for an example (Baskerville 1999, 15).

Once the problem has been diagnosed, the research moves to the action planning phase. In this phase, the desirable outcome together with the plan of actions to reach that outcome is stated. With the action plan established, the company can move to action taking, where the actions to reach the objective is implemented to the process.

The final phase used in this thesis is the evaluating phase, where the changes created by the actions will be evaluated to understand if the problem diagnosed earlier was eliminated by the action research.

Action research typically also includes the specifying learning phase, which can be adapted during any phase of the research. The purpose of this phase is to understand the success or failures of the research to increase knowledge. (Baskerville 1999, 16).

The action research methodology can continue as a cycle, should the problem be solved or not. Continuing the cycle can help the company understand themselves on a deeper level. (Baskerville 1999, 17). To reach the objective of this thesis, action research was conducted to understand and improve the customer service with the use of a chatbot.

4 Implementation of Research

To reach the goal of this thesis, action research was conducted with an actual customer of Leadoo MT. The customer previously had no experience of chatbots or live chat features, as they were considering both as an option to improve their customer service process on their website. The primary aim of the action research was to understand the effectiveness of chatbot usage in customer service. The effectiveness of this thesis is measured by the amount of time and staff effort required for the website visitor to get an answer to their question, or additional assistance.

This chapter will go through the state of the company's customer service before the implementation of bots and the state of their customer service after the bots have been implemented on their webpage. This chapter will also briefly describe the onboarding process of Leadoo MT to give a better understanding of what is taken into account when building new chatbots to improve the customer service and the user experience.

4.1 The Customer

The customer is a Finnish storage rental company, with their focus being mainly on consumers. The customer was looking for a solution to improve their customer service process as they were getting high amounts of questions regarding their services. The options were either to implement a live chat with customer service personnel to answer questions or to provide the information through chatbots. The customer decided to proceed with chatbots, choosing Leadoo MT to be their partner in the process. The customer used in this research wished to remain unnamed.

4.1.1 Diagnosing Phase

Before becoming a customer of Leadoo MT, The customer service process of the customer was very simple, allowing the visitor to contact the company by either a phone number or email address. The average number of requests received before the implementation of the chatbot was 410 requests per month. It was also difficult for the website visitors to find information about the services, making self-service difficult.

While the average waiting times of a visitor sending a request and receiving an answer were decent at around one business day, the customer felt that it was causing the customer service team too big of a workload. Considering a big number of the questions were frequently asked by different visitors, having customer service personnel answer the questions didn't seem logical.

Using the ITIL framework, it was demonstrated to the customer that a chatbot could replace the customer service team as first line support. This would offer the visitor instant service by giving the answer to their questions without the need of contacting the customer service. The customer was compelled by this suggestion and decided that they're willing to experiment it.

4.1.2 Action planning phase

The Leadoo MT process with a kickoff meeting held to understand the customer's expectations towards the service. The main questions to be answered in this meeting are depicted in the table below:

Question	Explanation	Customer's requirements
Goals of the bots	The purpose of the bots eg. customer service or lead gathering.	Bots will be built with the main focus on customer service.
Placement of bots within the webpage	In what sections of the webpage should the bots be placed in.	the chatbot will be embedded to the frontpage.
Wording of the bots	The mode of expression used in the bots.	Formal yet approachable mode of expression should be used. Emoticons are

		fine, though in moderation.
Name and picture used in the bots	The name and picture shown to the website visitor.	Name must include “Customer service”. Picture should be the logo of the company.
Lead criteria	What information is wanted from the lead. eg. name, phone number and email.	Email address or phone number and name.
Lead goals	How many leads are expected from the company per month.	The customer was looking to lower their contact requests, yet still receiving potential sales leads. Monthly questions were hoped to lower by 30% and sales lead generated was hoped to be at around 25 per month.
Lead forwarding	Who in the company should receive the arriving leads. eg. sales persons.	Customer service team will receive all leads and forward the appropriately themselves.
Potential integrations	Should the bots be integrated with any third party services. eg. CRM, Google analytics.	None needed.
Embedding of bots	Who takes care of the embedding of bots to the website. eg. Leadoo MT, Marketing partner	Customer said that they will take care of the embedding, if Leadoo MT offers instructions.

Schedule	When should the bots be ready and embedded to the website?	As soon as possible.

Table 1: Leadoo MT onboarding questions

Once the answers to these questions (See Table 1) are established, the process will be moved to the design phase where the bots are created by the Leadoo MT onboarding team using the Leadoo MT's backend (Figure 10):

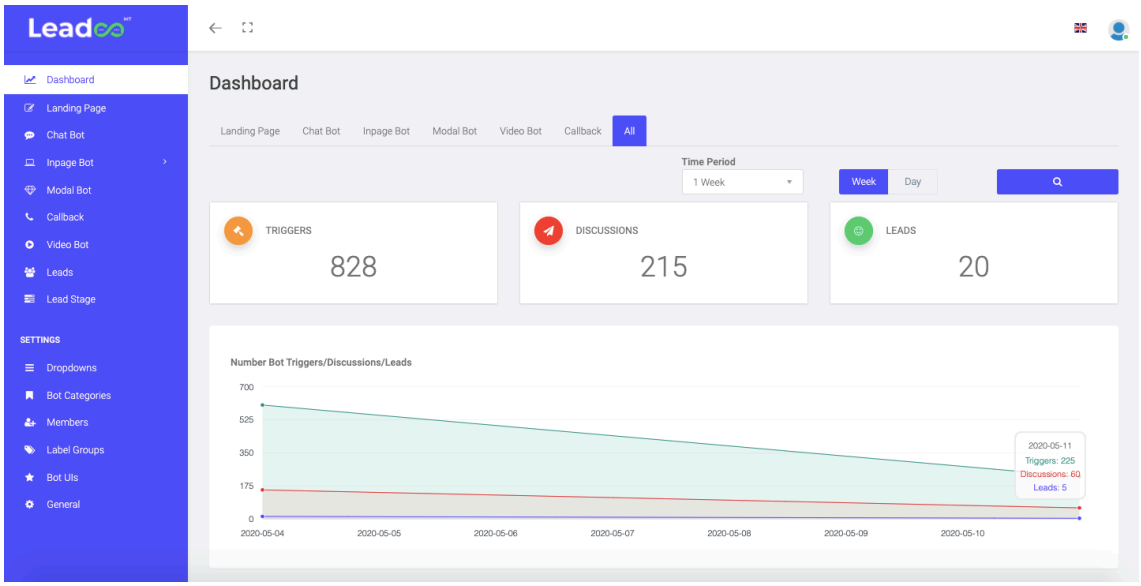

Figure 10: Leadoo MT's backend

The customer stated that they want the bots to be ready for embedding in a week's time, which is a normal time for the phase to be completed in. When starting to build the bot, the name and picture shown to the visitor are selected. During the kickoff meeting, the customer stated that it should be named "Company asiakaspalvelu" indicating that it's not a specific person behind the chat. For the picture, a simple logo was picked to keep the bot in line with the rest of the webpage. It was also the preference of the customer that the lead criteria is either the phone number or the email address of the visitor. All incoming leads are sent to the customer service email of the company.

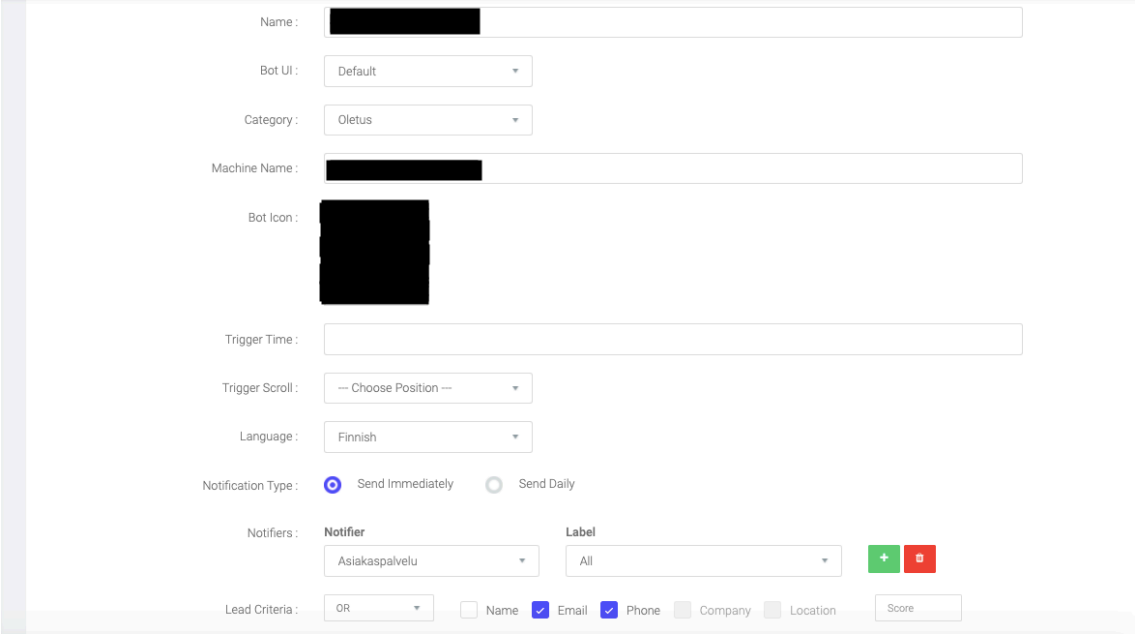

Figure 11: First settings of the bot. Note: Customer information have been deducted.

The bot was then built using the Leadoo MT's bot-builder tool shown in the figure below. The bot building phase was performed using the ITIL tier frameworks guidelines, as the approach of reaching the objectives of this thesis was to introduce the chatbot to become the new tier 1 of the framework, replacing the customer service team. This was made possible by creating the first options of the bot conversation to aim in giving the answer to the visitor instantly. Only if the question in the visitor's mind was not answered, the bot path would allow the visitor to send their own question, which will then be forwarded to tier 2 (customer service).

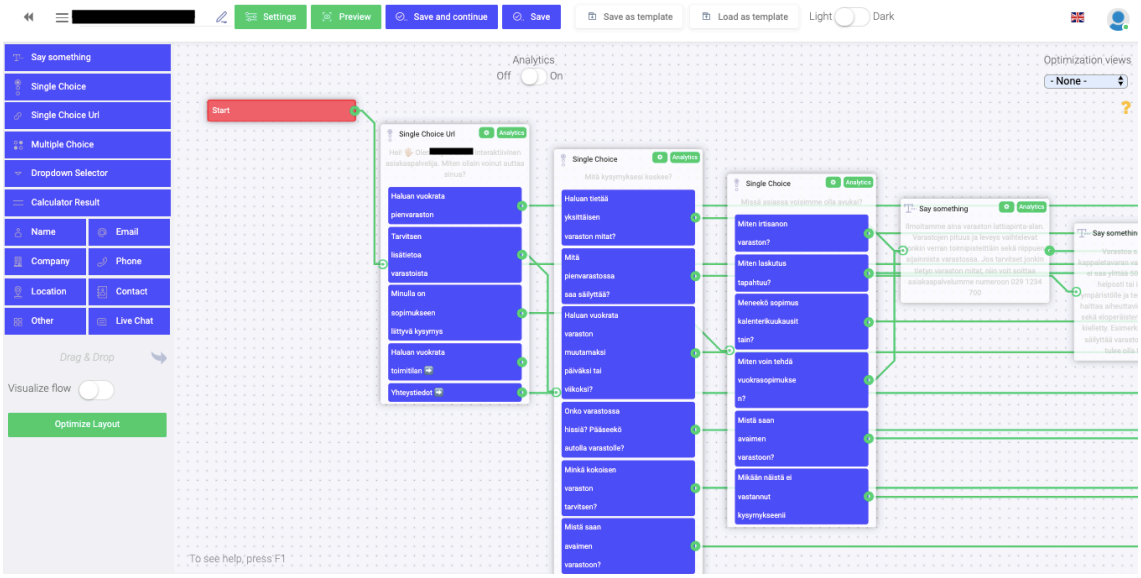

Figure 12: Leadoo Bot builder. Note: Customer information have been deducted.

When building the bot, the result followed the guidelines suggested by Budiu's (2018) article for NN Group. In the first sentence, the bot makes it clear to the visitor that they are indeed having a conversation with a computer program. The bot also offers clear options for the visitor to choose from. In the options, the bot offers ways for the visitor to read more about the provided storages, information about the contracts, and contact information should the customer wish to be in direct contact with the company. There are also two different conversion points, allowing visitors to leave an offer request for bot storages and business premises.

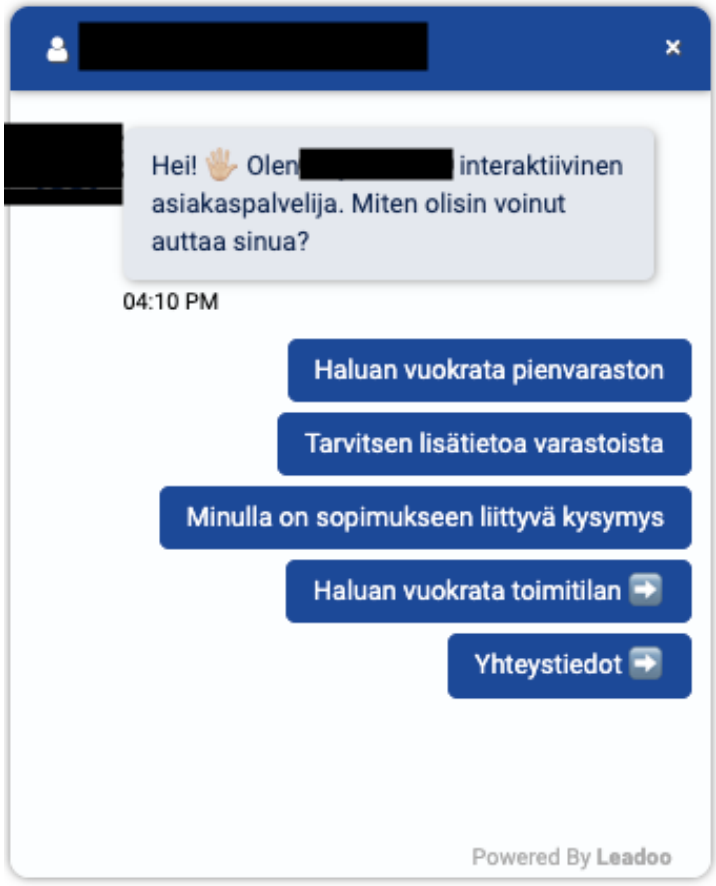

Figure 13: Finished chatbot. Note: Customer information have been deducted.

4.1.3 Action Taking Phase

Once the bot had been created, the customer received a notification that that finished bot may be inspected from the Leadoo MT's backend. This ensures that the bot paths have indeed been built according to the customer wishes and expectations. In the example used in this thesis, the customer approved the bots created and wished to proceed to the embedding phase.

The chatbot is embedded to the customer's website by adding the following script (See figure 14 below) between the customer's <head> </head> section of their website. This is done using the Content Management System (CMS) of the customer.

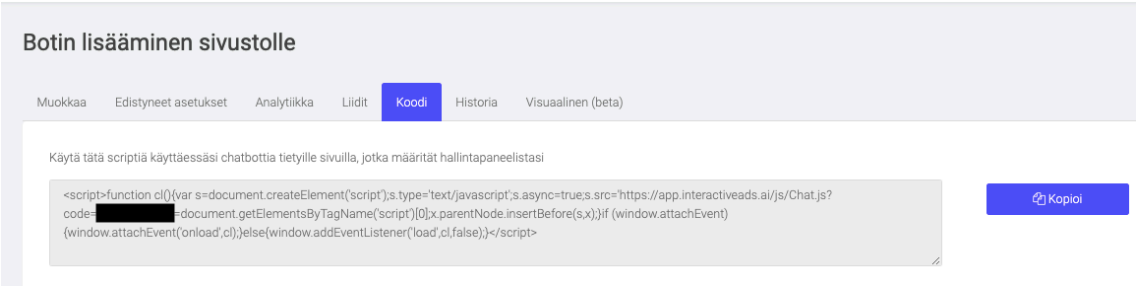

Figure 14: Script of the chatbot. Note: Customer information have been deducted.

Leadoo MT offers the customer the embedding of the bots as service with no additional costs. However, in some cases the customer however wants to embed the scripts themselves. This was the case for the customer used in this research.

After the script has been added to the website header, the URL of the page where the bot is wanted to open on is added to the bot settings. If the bot should only open in one specific page, such as the front page, “Page Specific” trigger type is to be used. “Domain Specific” trigger type would allow to bot to open across the whole website domain. As the purpose of the bot in this action research was to be used only in the frontpage, “Page Specific” type is chosen.

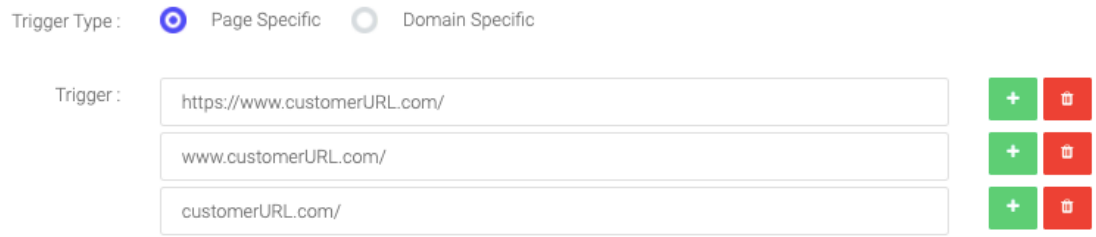

Figure 15: Chatbot trigger settings

After the bot has been on the customer’s website for a month, the first checkup meeting will be held. In the meeting, the statistics and data collected by the bot will be reviewed and valuated. The customer was satisfied with the results received and did not wish to do any changes to them at the current time.

While the core of the service desk process remained more or less the same, the implementation of a chatbot allowed the website visitors receive the information they were seeking instantly, without having to wait. The implementation of the chatbot also provided the visitors a new channel to send questions from. If the question was not answered by the bot, the visitor was offered an option to send a question of their own. While the question was not answered instantly, the visitor was able to send a message right there and then, without having to either move to an email application or calling the company by phone.

4.1.4 Evaluating Phase

Overall, the implementation of bots brought the customer positive results. In an interview with the customer, they stated that the monthly requests received by the customer service personnel was reduced by approximately 60%. In this case, the customer previously received approximately 410 requests from emails and phone calls in a month. With the chatbot being implemented on to the website, and the interview held with the customer, the empiric study made for this thesis concludes.

5 Results

This chapter will summarize the information collected through the theoretical and empiric research. This chapter will look into the analytics offered by Leadoo MT's backend. Instead of a one-month period, this data was collected in three months. A longer time period offers the chance to have a better understanding on how the chatbot serves the website visitors.

The number can be considered as a great improvement to the customer experience, as the repeating questions that previously had to be answered by an actual person were now taken care of by the bot. As Cancel & Gerhardt (2018, pp) stated, the biggest benefit of chatbots for consumers is the ability answer questions at all times and instantly. The score was two times the value offered in Reddy's article for IBM, where he suggested that the chatbots may be able to reply up to 30% of consumer service calls. This may be due to various different reasons, which will be discussed in the discussion chapter of this paper.

To get a more in-depth idea on how the chatbot served the website visitors, three different figures about the bot analytics will be presented. This data is automatically collected by Leadoo MT's backend, which was introduced above.

Figure 16: Chatbot opening answers. Note: Customer information have been deducted.

The figure above shows the answers all of the visitors that interacted with the bot. From 5133 visitors, 38,7% chose the option to get more information about the storages, while 19,5% had a question about an agreement. Through the bot's first question, 9,8% were forwarded to the contact information page, 4,9% to the business premises page and 27,2% stated that they are interested in renting a storage space.

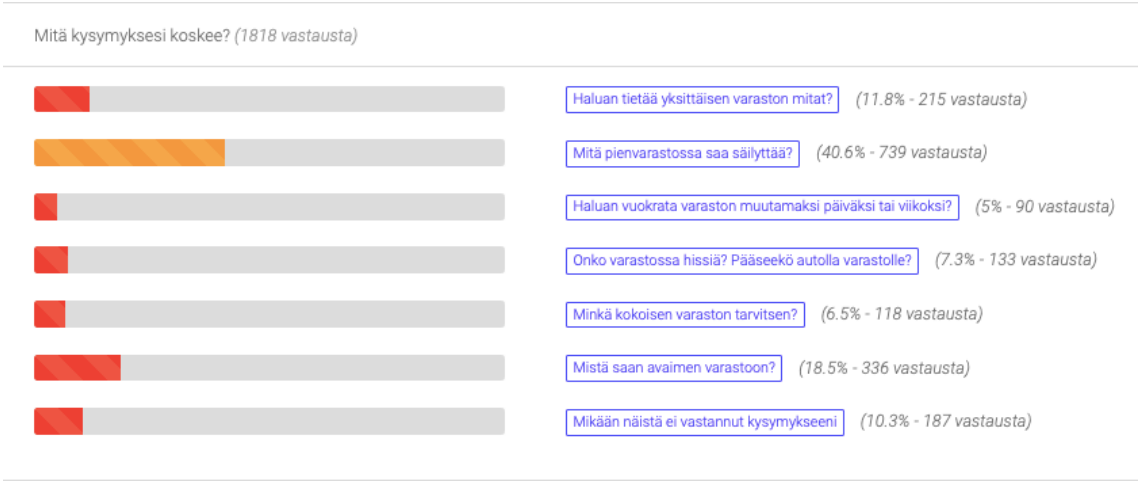

Figure 17: Chatbot questions about services

In this figure (Figure 17), the visitor choices of the storage information path are shown. The most important number from this is the bottom option, where the visitor can tell that none of the other options answered their question. Out of these replies, it shown that 89,7% of questions about the storages are answered within the bot. It should be noted that while the visitor doesn't get an answer instantly, the conversation path continues with an open question field, which will be forwarded to the customer service team.

Figure 18: Chatbot questions about agreements

In the questions about agreements path, the results are a bit different (Figure 18 above). It is shown that 33,7% of visitors who have a question about the agreements are not given an answer within the bot. This may be due to the fact that questions about agreements are more specific depending on the visitor's situation. However, 66,3% of the questions asked from the bot are answered, which is positive result.

According to these results, approximately 82% of all of the questions visitors have when interacting with bots are answered. The reason this number is different from the 60% offered by the customer is because many visitors still use the traditional ways of contacting the customer service, which were explained in the methodology chapter.

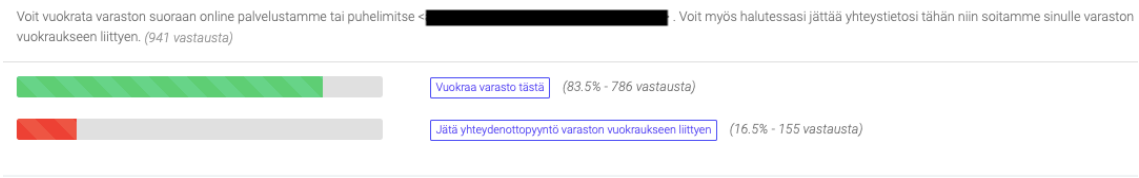

Figure 19: Storage rental path answers. Note: Customer information have been deducted.

When looking at the rental of storage path (See figure 19 above), it's shown that 16,5% of the repliers are not ready to be forwarded to the page where the purchase can be made but are still wondering something. The path then continues by asking the visitor for their contact details. When a visitor agrees to write in the details, the bot forwards them to the company, resulting in a potential sales lead. The company now knows that the visitor is interested in renting a storage space and contacting them to convert them into customers should be probable.

With the results demonstrated, introducing an automated customer service tool (chatbot) to the first line support featured in the ITIL framework can greatly reduce the requests received by the second line support, in this case the customer service personnel. As the workload of

the customer service team has been reduced, the company is offered the chance to reduce the workforce for cost savings. This will be further elaborated in the following sub-chapter.

5.1 Comparing the Results With the Research Objective

The objective for this thesis was stated as finding out whether chatbots can be used to save costs by implementing them to the customer service process.

With the results received from the action research, it is evident that the chatbots can be efficiently used in the customer service sector. When it is known that website visitors often have the same questions when visiting a site, being able to offer the answer instantly on the first page they see without any manual work will reduce the workload of the customer service personnel. Resulting from this, as the workload can be reduced with the implementation of chatbots, the company can consider reducing the workforce accordingly. The company may also consider moving the unneeded employee to a different role. In a customer service team of three people, reducing the visitor requests by over a half, it is demonstrated to the customer company that the team can be shortened by one staff member without having the current level of service decreased. According to Duunitori (2018) the average wage of a customer service worker is at 2399€ per month. With Leadoo MT's service that includes the chatbot priced at 499€, including the planning, building, and embedding of the bots, the customer can save approximately 1900€ monthly.

6 Conclusion

In summary, together with the insight offered by the theoretical and empiric research, it is shown that implementing a chatbot to the customer service process can be very beneficial to a company in a savings point of view. Implementing a chatbot to be the first line of support facing the customer can greatly decrease the workload of the customer service team. This offers the opportunity to reduce workforce for savings. When considering the price of workforce and the price of Leadoo MT's service, replacing one customer service worker with a chatbot creates annual savings of 22 800€, according to the average wages of customer service workers. Utilizing the ITIL framework in a customer service development process proved to be efficient. While ITIL is mostly used in the IT-sector, it can certainly be applied to other fields as well to provide positive results.

However, to have deeper understanding of the topic, more researches should be conducted. Chatbots do seem to be here to stay, as the constant improvement of AI will create numerous possibilities.

As the empiric study was made using just one company in one industry, differences between companies are possible. Therefore, more studies should be made about the topic to have a better understanding of chatbots in different industries. This thesis was also made with the main weigh being on customer service. Chatbots may have multiple other benefits that were not discussed. This empiric study was made using chatbots that introduce no AI or NLP. The results can be expected vary should other kinds of bots be implemented to customer service.

The author feels it should be stated that many of the sources used when writing the theoretical part of the thesis were considerably biased, some articles reviewed were conducted by companies that offer chatbots as a product. This makes it possible that some of the sources used in the thesis may be unreliable.

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Figures

Tables

Question	Explanation	Customer's requirements
Goals of the bots	The purpose of the bots eg. customer service or lead gathering.	Bots will be built with the main focus on customer service.
Placement of bots within the webpage	In what sections of the webpage should the bots be placed in.	Chatbot will be embedded to the frontpage.
Wording of the bots	The mode of expression used in the bots.	Formal yet approachable mode of expression should be used. Emoticons are fine, though in moderation.
Name and picture used in the bots	The name and picture shown to the website visitor.	Name must include "Customer service". Picture should be the logo of the company.
Lead criteria	What information is wanted from the lead. eg. name, phone number and email.	Email address or phone number and name.
Lead goals	How many leads are expected from the company per month.	The customer was looking to lower their contact requests, yet still receiving potential sales leads. Monthly questions were hoped to lower by 30% and sales lead generated

		was hoped to be at around 25 per month.
Lead forwarding	Who in the company should receive the arriving leads. eg. sales persons.	Customer service team will receive all leads and forward the appropriately themselves.
Potential integrations	Should the bots be integrated with any third party services. eg. CRM, Google analytics.	None needed.
Embedding of bots	Who takes care of the embedding of bots to the website. eg. Leadoo MT, Marketing partner	Customer said that they will take care of the embedding, if Leadoo MT offers instructions.